

Missouri STEM Report 2016-2026



DEPARTMENT OF
HIGHER EDUCATION &
WORKFORCE DEVELOPMENT

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Missouri STEM and STEM-Related Occupations

STEM (Science, Technology, Engineering and Mathematics) and STEM-Related occupations are some of the most in-demand and highest paying jobs in Missouri. In fact, the need for such employees is projected to grow twice as fast as the average for all occupations. The projected growth rate for STEM and STEM-Related occupations from 2016-2026 is 14.6 percent, while the statewide average for all occupations is 7.3 percent. By 2026, the total employment for STEM and STEM-Related occupations is expected to be more than 420,000, an increase of more than 50,000 jobs.

Wages for STEM and STEM-Related occupations are also higher than the average for all occupations. The average wage for all occupations in Missouri is \$45,520, while the average wage for STEM and STEM-Related occupations is \$76,990.

Education is the key to meeting the demand for STEM and STEM-Related workers. Of the 179 STEM and STEM-Related occupations in Missouri, 174 require some level of postsecondary education. Most occupations typically require a bachelor's degree (70 occupations) or master's and beyond (63 occupations). In addition, 32 occupations require an associate degree.

What is STEM and STEM-Related?



Science

Science includes those who conduct research and experiments in labs, as well as areas of Natural Science. Outdoor field work is an integral part of most live and biological science occupations, and natural science technicians play a key role in assisting scientists in their experimentation and discovery.



Technology

Technology occupations are most commonly found in the areas of computer information technology, but also include any occupation that requires technical skill. Technology workers may create new software, develop databases or assist users in maintaining their computer's performance.



Engineering

Engineers develop and test new products. Engineers incorporate elements of science, technology and math in their work, and include Civil, Electrical and Mechanical Engineers among others, as well as drafters and technicians who provide assistance throughout the process.



Mathematics

Math is part of many occupations, but for some, mathematics is at the heart of what they do. Actuaries, Statisticians and Research Analysts use mathematics for risk assessment, problem solving and various types of data analysis.

STEM-Related occupations include Architecture and Health Care occupations. They mainly focus on design and patient care, but also rely heavily on many of the STEM principles.

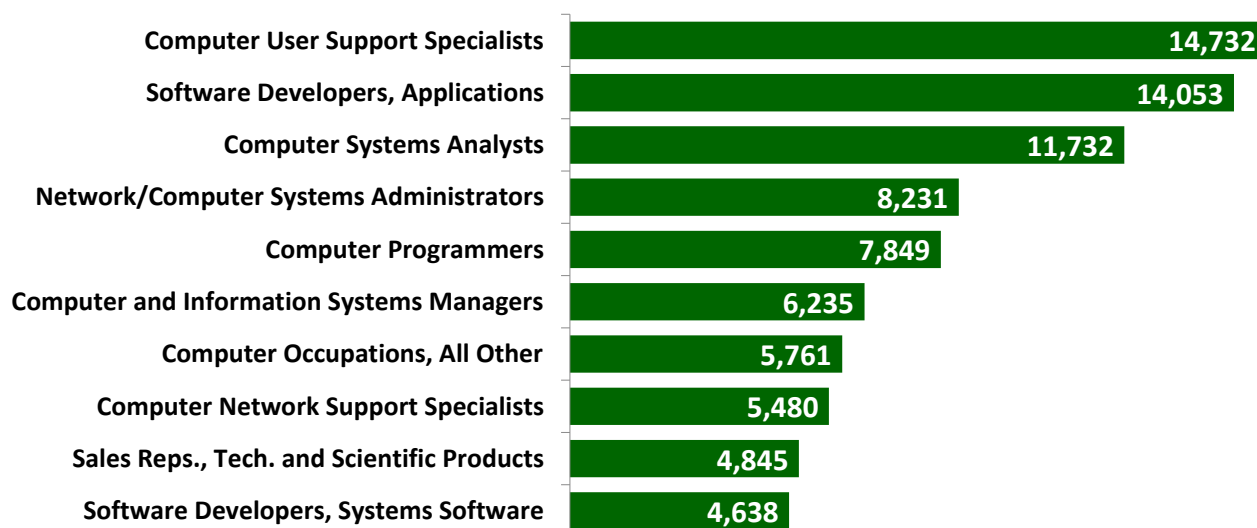
STEM Occupations in Missouri

In Missouri, there are more than 100 jobs listed as STEM occupations, and they can be found in many different industries. Some occupations are industry specific due to their scope, while other occupations are wide ranging in their industrial usefulness.

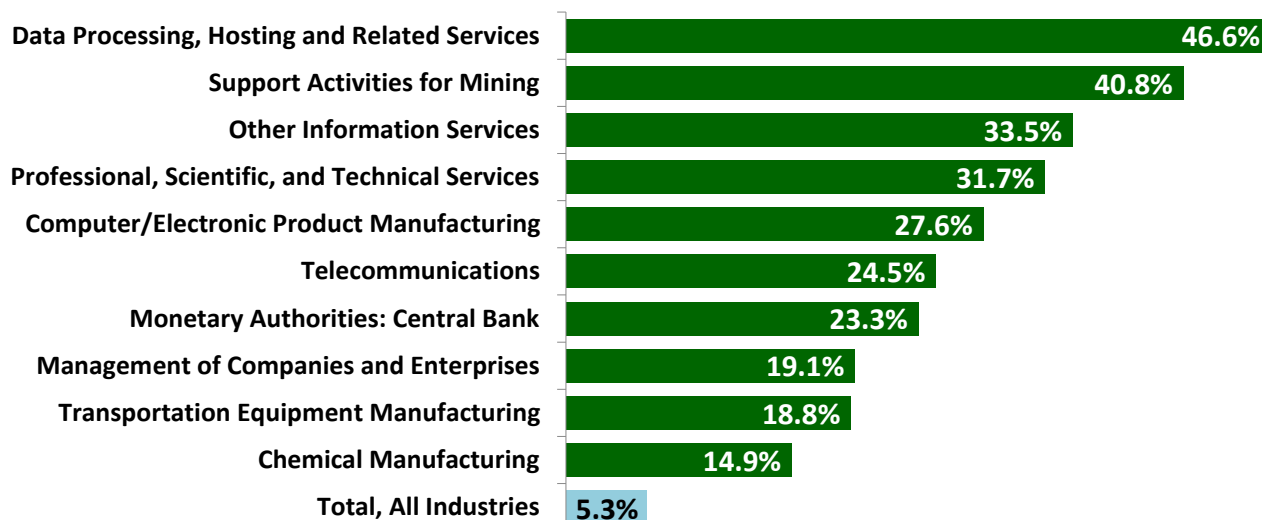
From entry-level technicians to positions requiring advanced degrees and experience, STEM occupations exist all throughout Missouri's workforce.

Nine of the top 10 STEM occupations by employment were related to computers, with the Computer User Support Specialist occupation having the largest employment. Overall, STEM occupations make up 5.3 percent of Missouri's total employment. In some industries, however, STEM occupations make up a large percentage of those employed. Some industries are more suited to the skills and knowledge associated with STEM employment. Information and Manufacturing both account for three of the top 10 industries with the highest percentage of STEM employment.

Largest STEM Occupations



STEM Percent of those Employed by Industry



STEM Occupations Earn Higher Wages

STEM occupations can be found in many different industries throughout Missouri and are also some of the highest paying jobs in the state. As a group, STEM occupations earn 78 percent more than the Missouri average.

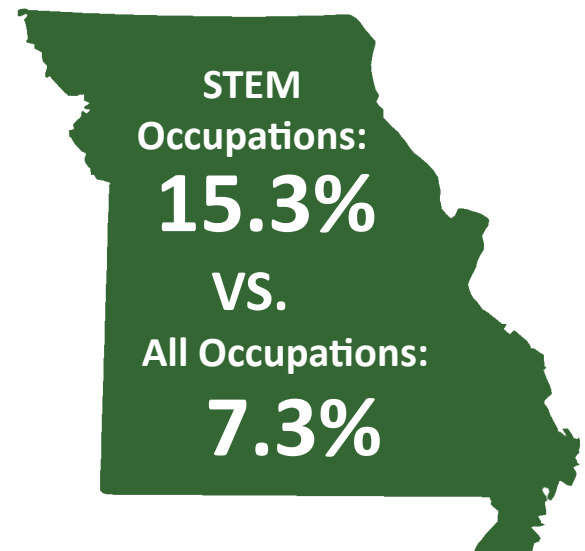
Like with other occupations, STEM occupations requiring a higher level of education usually pay more than those that do not. The 10 highest paid STEM occupations require a bachelor's degree or higher, and three of the top 10 require an education beyond a bachelor's degree (Physicists, Economists, and Postsecondary Engineering Teachers).

Of the more than 100 STEM occupations in Missouri, only seven have an average wage below the state average. With higher than average wages and a broad industrial appeal, STEM occupations are a strong part of Missouri's economy. STEM occupations provide quality jobs now, and are also projected to be a valuable part of Missouri's employment future.

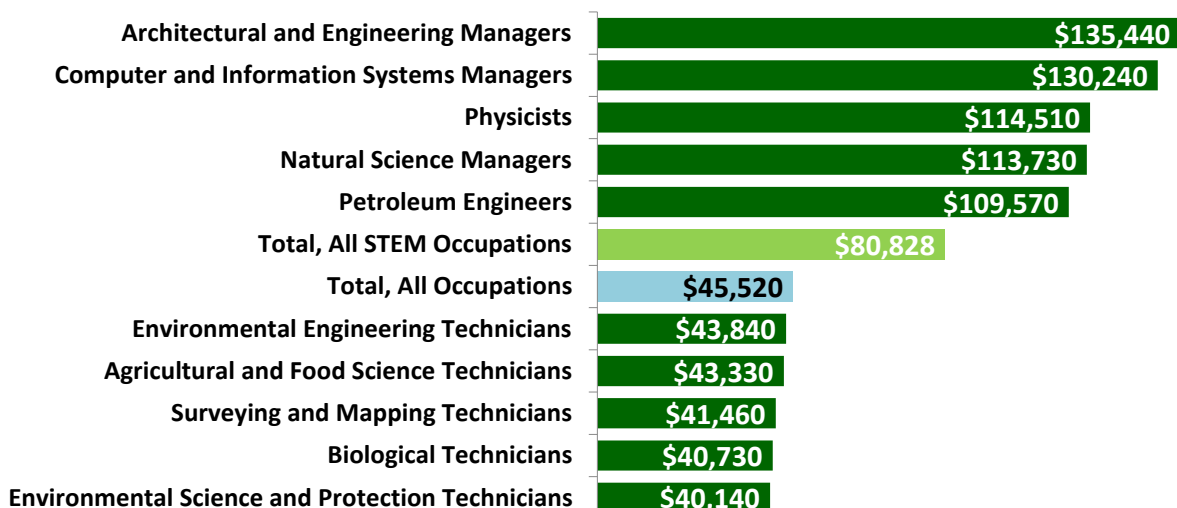
In 2016, STEM occupations accounted for 5.3 percent of Missouri's total workforce, but these same occupations are projected to compose 11.1 percent of the statewide 2016-2026 growth. Missouri's projected growth rate for all STEM occupations is 15.3 percent during that same time frame. Compare this to the overall projected growth rate for the state of 7.3 percent, and it is clear that STEM occupations are an important part of the state's economic growth.

As computers and other forms of technology become increasingly important in our everyday personal and work lives, the demand for workers who can create and maintain these new advances will only be on the rise. Nine of the top 10 STEM occupations with the greatest number of projected openings are related to computers.

Projected Growth Rates in Missouri 2016-26



STEM Highest and Lowest Average Wages

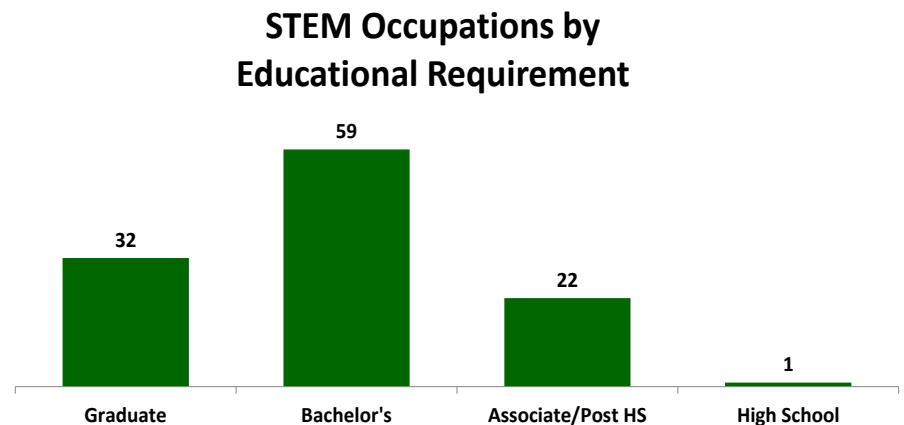


As innovations create new demands in the workplace, employees and job seekers with an education and training in the areas of Science, Technology, Engineering and Math will be in high demand. These skills are valuable within their own field of expertise, and areas such as Health Care and Manufacturing also have an increasing need for STEM employment. With a solid foundation of employment, wages and growth, STEM occupations have established themselves as an important part of Missouri's economy for years to come.

STEM Occupations with most Projected Annual Openings 2016-2026						
Occupation	2016	2026	2016-2026			2017 Wages
	Estimated Employment	Projected Employment	Net Change	Percent Change	Annual Openings	Average Wage
Software Developers, Applications	14,053	19,687	5,634	40.1%	1,622	\$96,100
Computer User Support Specialists	14,732	17,202	2,470	16.8%	1,393	\$46,570
Computer Systems Analysts	11,732	13,897	2,165	18.5%	1,023	\$88,110
Computer and Information Systems Managers	6,235	7,380	1,145	18.4%	605	\$130,240
Network and Computer Systems Administrators	8,231	8,907	676	8.2%	591	\$80,280
Sales Representatives, Technical and Scientific Products	4,845	5,166	321	6.6%	533	\$84,320
Computer Occupations, All Other	5,761	6,611	850	14.8%	492	\$81,060
Computer Programmers	7,849	7,649	-200	-2.6%	461	\$80,030
Computer Network Support Specialists	5,480	5,974	494	9.0%	461	\$55,100
Software Developers, Systems Software	4,638	5,498	860	18.5%	404	\$96,200

STEM Occupations and Education

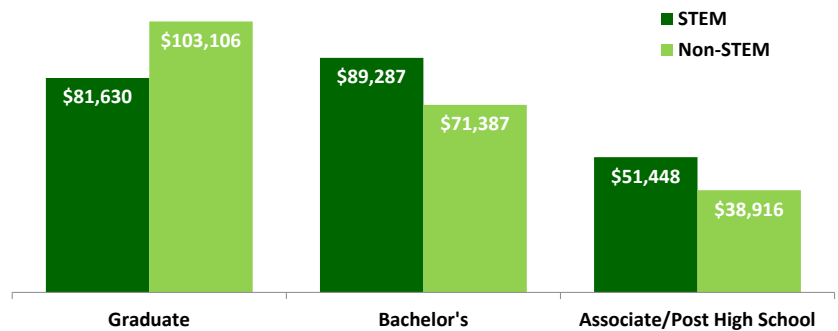
The key to meeting the increased demand for STEM-skilled employees is education. There are 114 occupations classified as STEM in the state of Missouri, and all but one requires education or experience beyond the high school level, and 75 percent of all projected STEM job openings require a bachelor's degree or more.



Workers employed in STEM occupations that typically require an associate degree or postsecondary certificate out-earn their non-STEM counterparts. On average, occupations that typically require an education beyond high school, but short of a bachelor's degree, earn \$51,448 a year in STEM occupations. Conversely, non-STEM occupations with the same education requirement earn on average \$38,916 a year. This means that in a typical year, people who focus their education and work experience in areas related to STEM occupations earn 32.2 percent more than their non-STEM coworkers. These occupations tend to be of a more skilled entry-level, such as Technician, and concentrated in the areas of Drafting, Engineering, Life and Physical Sciences.

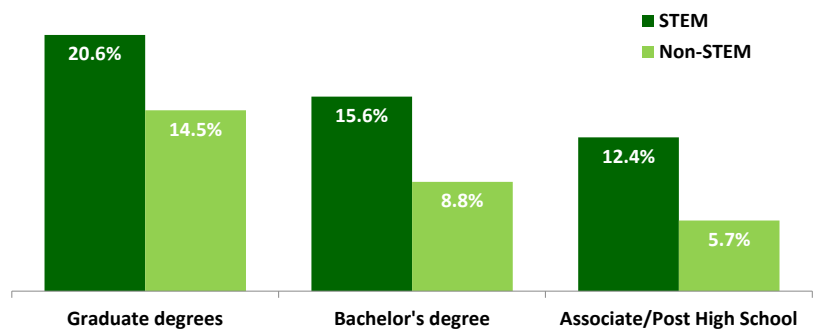
The advantages of a STEM education in Missouri continue at the bachelor's degree level. STEM occupations that typically require a bachelor's degree earn an average of 25.1 percent more than their non-STEM counterparts. The growth rate for STEM occupations at this educational level also outpaces non-STEM occupations.

Annual Wages by Education



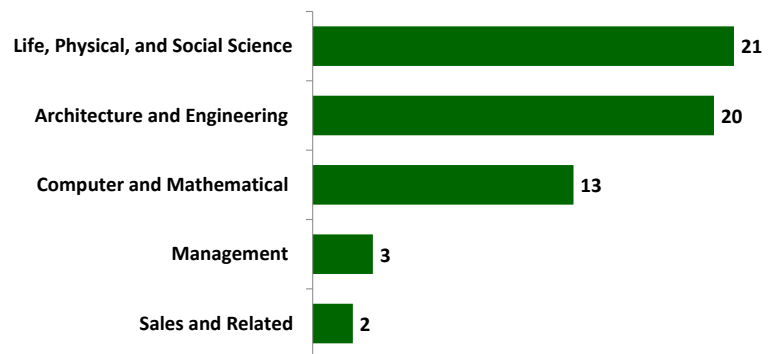
STEM occupations that typically require a level of education beyond high school are projected to have higher rates of growth than non-STEM occupations from 2016-2026. STEM occupations that typically require a graduate degree are projected to have the highest average growth rate.

Projected Growth Rate by Education



There are 59 STEM occupations that require a bachelor's degree, 21 can be found in the Life, Physical, and Social Science occupation group. Another 20 occupations are in the Architecture and Engineering occupation group.

STEM Bachelor's Degree Occupations



There is a continued need for STEM education to be an important part of Missouri's school curriculum from elementary school, to high school and beyond.

This emphasis is supported by state cooperative programs such as the Missouri AfterSchool Network (MASN), a system designed to improve, support, and sustain high-quality after school programs. In addition, national programs such as the PBS show SciGirls, encourage young girls to pursue a STEM education using a hands-on STEM approach in solving real world problems. A STEM-focused education continues into high school and is further supported by organizations such as the Missouri Math and Science Coalition, which works to bring educators, businesses, government agencies and community organizations together for the purpose of improving Missouri's STEM education and employment. Beyond high school, scholarship programs have been established in Missouri to help those pursuing a degree in STEM-related fields. Furthermore, organizations such as Science and Citizens Organized for Purpose and Exploration (SCOPE) are building a statewide network with schools, businesses, policymakers and communities to share the resources, opportunities and benefits of science and technology.

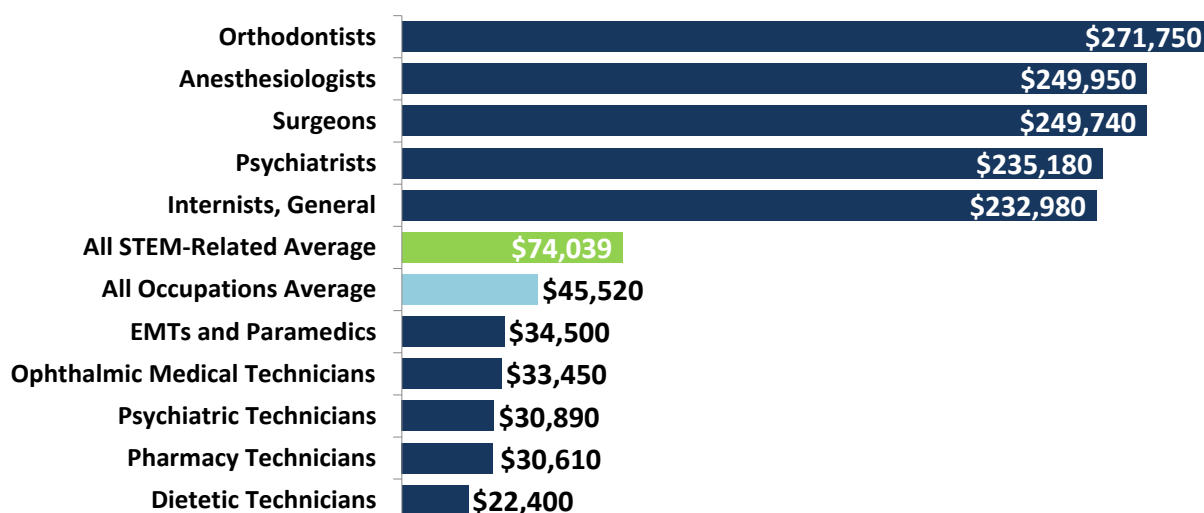
STEM-Related Occupations in Missouri

There are 65 STEM-Related occupations in Missouri, which are in the fields of Architecture and Health Care. The top 10 largest employed STEM-Related occupations are all in the Health Care and Therapy fields, as are the top 10 STEM-Related occupations with the most projected total openings.

STEM-Related Occupations with most Projected Annual Openings 2016-2026						
Occupation	2016	2026	2016-2026			2017 Wages
	Estimated Employment	Projected Employment	Net Change	Percent Change	Annual Openings	Average Wage
Registered Nurses	73,783	85,446	11,663	15.81%	5,177	\$63,300
Licensed Practical and Licensed Vocational Nurses	16,396	17,677	1,281	7.81%	1,321	\$41,180
Pharmacy Technicians	10,405	11,857	1,452	13.95%	1,000	\$30,610
Medical and Health Services Managers	6,276	7,428	1,152	18.36%	636	\$106,810
Health Specialties Teachers, Postsecondary	5,043	6,793	1,750	34.70%	617	\$163,280
Emergency Medical Technicians and Paramedics	6,391	7,211	820	12.83%	480	\$34,500
Medical Records and Health Information Technicians	5,326	5,939	613	11.51%	394	\$41,620
Medical and Clinical Laboratory Technicians	4,932	5,446	514	10.42%	366	n/a
Pharmacists	6,815	7,347	532	7.81%	353	\$123,610
Nurse Practitioners	4,042	5,171	1,129	27.93%	334	\$96,490

The average wage for all STEM-Related occupations is \$74,039. While lower than the average wage for all STEM occupations, it is still considerably higher than the state average, of \$45,520, for all occupations. In fact, 79 percent of all STEM-Related occupations earn more than the state average.

STEM-Related Highest and Lowest Average Wages



STEM-Related Occupations and Education

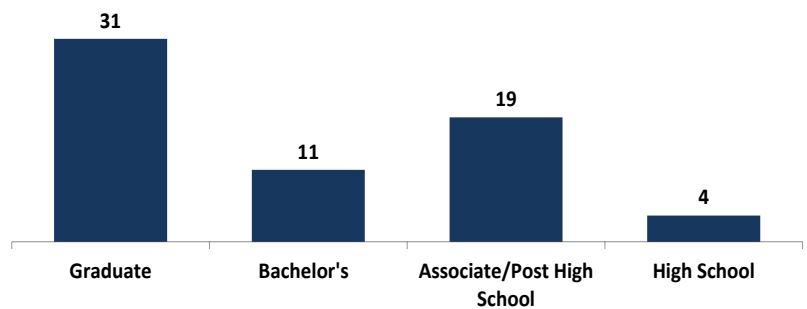
Sixty-one of 65 STEM-Related occupations require an education beyond the high school level and 42 occupations require a bachelor's degree or more.

At the highest degree levels, master's and doctoral degrees, the wage advantages of a STEM-Related occupation are the most obvious. STEM-Related occupations that typically require a graduate degree earn an average of \$136,490 annually, compared to an average \$75,267 for non-STEM-Related occupations requiring a graduate degree.

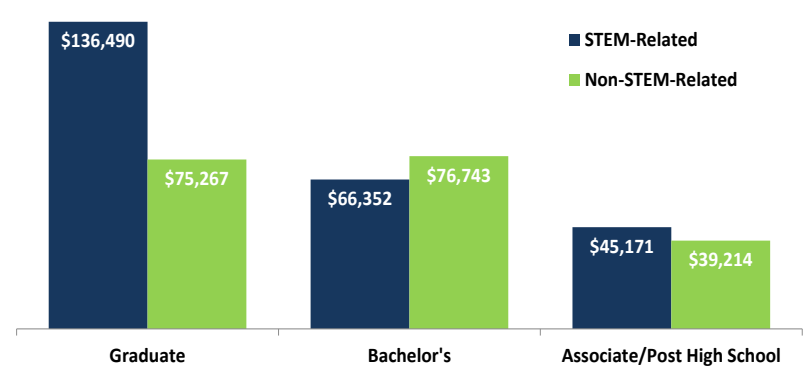
STEM-Related occupations are expected to be an important part of the workforce of the future. The 2016-2026 projected average growth rate for all STEM-Related occupations is 14.2 percent, which is almost twice the overall projected growth rate for all occupations. STEM-Related occupations at all education levels are projected to grow faster than the state average for non-STEM-Related occupations.

Continued investment in education is required for STEM and STEM-Related occupations and is a key part of Missouri's employment future. As more occupations place an emphasis on the knowledge and experiences found within these disciplines, the demand for these skills will increase.

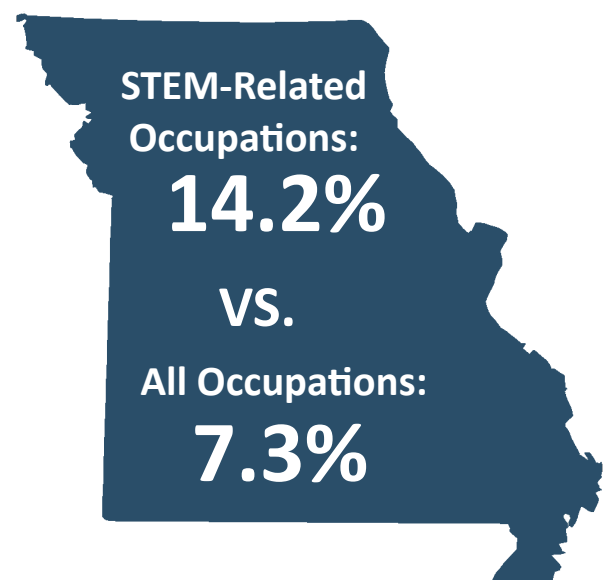
STEM-Related Occupations by Educational Requirement



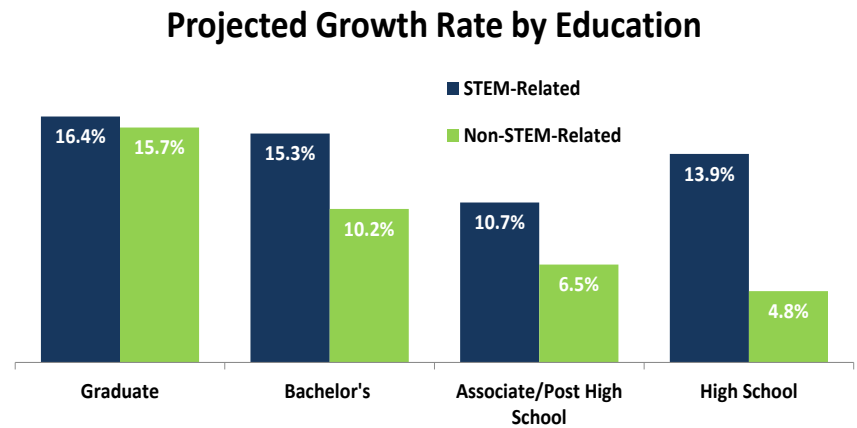
Annual Wages by Education



Projected Growth Rates in Missouri 2016-26



The 2016 Business Roundtable Education and Workforce Survey¹ found that more than half of the employers surveyed thought applied STEM knowledge in engineering, data science/ analytics, and computer science were very relevant to the job openings in their companies, confirming the demand for STEM knowledge even in non-STEM jobs. According to the same survey, finding qualified applicants with emerging STEM skills, such as cybersecurity and data analytics was very problematic for almost half of the respondents. Educating Missouri's workforce with the necessary STEM skills is crucial to meeting these demands.



Notes

MERIC uses the definitions developed by the Standard Occupational Classification Policy Committee (SOCPC) to classify occupations as STEM or STEM-Related. The SOCPC is comprised of representatives from the Department of Labor, Bureau of Labor Statistics and Employment Training Administration; the Department of Commerce, Census Bureau; the Department of Defense, Defense Manpower Data Center; the Equal Employment Opportunity Commission; the Department of Health and Human Services, Health Resources and Services Administration; the Department of Education, National Center for Education Statistics; and the National Science Foundation, National Center for Science and Engineering Statistics. The SOCPC was organized at the request of the Office of Management and Budget to create standard guidelines for the classification of STEM and STEM-Related occupations.

STEM definition developed by the Standard Occupation Classification Policy Committee using the 2010 SOC system². This report covers those occupations determined by the committee to be CORE STEM occupations in the fields of Life, Physical and Social Science, as well as Engineering, Mathematics, and Information Technology.

Sources

- Bureau of Labor Statistics (BLS) Occupational Projections used to define typical education and training requirements.
- BLS Division of Occupational Employment Statistics (OES) data used to define STEM occupations and wages.
- Occupational and Industry projections developed by the Missouri Economic Research and Information Center (MERIC)

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Endnotes

1. 2016 Business Roundtable Education and Workforce Survey. Business Roundtable. Retrieved August 2019 from https://s3.amazonaws.com/brt.org/archive/reports/BRT_Education_and_Workforce_Survey_June_7_2017.pdf
2. SOC Policy Committee recommendations regarding STEM definition. Retrieved February, 2017 from https://www.bls.gov/soc/Attachment_A_STEM.pdf